

Amendment under 37 C.F.R. §1.116
U.S.S.N. 08/252,710

The specification has been amended to correct inadvertent typographical errors, clerical errors, and grammatical mistakes.

Support for the amendment made to page 10, lines 27-28 can be found in original Figs. 11A and 11B, and on page 9, line 25 - page 10, line 22 which describe the construction of the vectors.

Support for the amendment made to page 10, line 34, can be found in Fig. 4 which is a schematic diagram of the α -SGC retroviral vector showing where the CMV enhancer is found in the construct; in original Fig. 11B (amended herein as Fig. 11C) showing intermediate thickness cross hatching at the site where the CMV enhancer is found in the construct; and on page 10, line 25 - page 11, line 3 in the description of the construction of the vectors.

Support for the amendment made to page 11, line 1 can be found in Fig. 4, which is a schematic diagram of the α -SGC retroviral vector showing that the α -globin promoter is found next to and downstream of the CMV enhancer; in original Fig. 11B (amended herein as Fig. 11C) showing a filled box at the site of the α -globin promoter; and on page 10, line 25 - page 11, line 3 in the description of the construction of this vector.

Support for the amendment made to page 15, lines 2-4, can be found in the specification at page 9, line 28 through page 10, line 1, which describes the MFG vector and specifies that the gag coding sequence is on the 5' fragment, while the Nde*(+5401)-NlaIII (+5740) fragment, which is linked to the 5' fragment, contains the splice acceptor site necessary for the generation of the *env* mRNA; at page 28, line 35 through page 29, line 2, and Fig. 3 which describe the splice acceptor sequence from derived from MOV-9; and in Figure 9B, which specifies that the splice acceptor site of the vector is not from the gag sequence but is, rather, from position 5402-5766 of MOV 9.1.

Amendment under 37 C.F.R. §1.116
U.S.S.N. 08/252,710

Support for the amendment to pages 28 and 29 (relating to MOV-9.1) can be found in Fig. 3.

Support for the amendment made to page 29 (relating to the initiation codon) can be found at page 9, line 33 - page 10, line 5, and Fig. 3. Support for the amendment to the sequence shown schematically on pages 29-30 can be found in Fig. 9B.

Claims 1, 4, 10, 21, and 44 have been amended to more clearly describe that which Applicants claim as their invention.

Claim 3 has been canceled; thus, claim 4 has been amended to depend upon a pending claim.

Claim 44 has been amended to correct inadvertent typographical errors.

Claims 1, 10, and 21 have been amended to clarify that the splice acceptor of the claimed vector is a splice acceptor site that is necessary for the generation of the *env* mRNA of a wild type retrovirus. Support for these claim amendments can be found in the specification at page 9, line 35 through page 10, line 1; and at page 2, lines 26-33.

The figures have also been amended to correct inadvertently made errors.

The amendment made to Fig. 7 is supported by the specification at page 9, lines 10-11.

The amendments made to Fig. 9B are supported by Fig. 9A and the specification at pages 29-30 and as specified above.

The amendment made to Fig. 10 can be found at page 31, lines 29-34.

Figs. 11 A, B, and C have been amended to reposition the designation letters ("A", "B", and "C"), in accordance with the text, and also have been amended for consistency to use the same wide spaced hatches in each schematic for the identification of the human ADA coding sequence which is present in each of the depicted vectors. Support for these amendments can be found in Fig. 11 as originally filled and in the description of Fig. 11 on pages 9-11 which identifies the ADA gene in

Amendment under 37 C.F.R. §1.116
U.S.S.N. 08/252,710

each construct. A review of Fig. 11 as originally filed shows that the same marking of heavy stippling were used at each place where ADA is now indicated by wide spaced hatches. Fig. 11B, schematic diagram of "FRIEND-Enh" has been amended to use cross hatching in the portion of the schematic located between the NheI and KpnI sites. The cross hatches have been introduced to insure that this segment of the schematic is readily distinguished from other segments. Support for this amendment is found in originally filed Fig. 11B. A review of originally filed Fig. 11 shows that light stippling was used to distinguish this portion of the figure from other marked portions of the figures. Amended Fig. 11C has also been amended to replace " α G-SGC" with α -SGC. Support for this amendment can be found on page 51, line 21.

None of the above amendments to the specification, claims, or figures introduces any new subject matter, as support may be found throughout the Application as originally filed.

The Claims Are Patentable Under 35 U.S.C. §112, First Paragraph

Claims 1-4, 6-31, 35-37, and 42-44 reciting the limitation "*consensus splice acceptor site*" stand rejected under 35 U.S.C. §112, first paragraph, insofar as the limitation "*was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention*" (see Office Action, page 2, paragraph 2). It should be noted that Examiner's assertions in the Office Action refer to a new matter rejection; however, because the actual rejection made was a written description rejection, Applicants have responded to it as such.

In order to facilitate prosecution and as discussed in the October 30, 1999 interview, Applicants have deleted the word "consensus" from claim 44 and have amended independent claims 1, 10, and 21 to recite that the splice acceptor site is a acceptor site necessary for the generation of the *env* mRNA of a wild type retrovirus.

Amendment under 37 C.F.R. §1.116
U.S.S.N. 08/252,710

Support for these claim amendments is found in the specification at page 9, line 35 through page 10, line 1 and in Fig. 11A; and at page 2, lines 26-33, and in Fig. 1.

With the present amendments to claims 1, 10, and 21, Applicants have clarified that the splice acceptor site of the claimed vectors is the splice acceptor site necessary for the generation of the *env* mRNA in wild type retroviruses (see Fig. 1). For example, Applicants respectfully direct the Examiner's attention to the abstract of Lazo et al., "Splice acceptor site for the *env* message of Moloney murine leukemia virus," *J. Virol.* 61(6): 2038-2041, 1987 (reference provided herewith as Appendix B), where the splice acceptor site in the *env* gene of this representative wild type retrovirus is taught to be located at position 5490 in the Mo-MuLV genome. Applicants aver that one with skill in the art at the time of the invention would have known that the splice acceptor of the claimed vectors is the same as the splice acceptor site necessary for the generation of the *env* mRNA of a wild-type retrovirus since position 5402-5766 of the sequence of MOV-9.1 contains the splice acceptor site taught by Lazo et al. as being necessary for the generation of the *env* mRNA of the Moloney murine leukemia virus retrovirus.

Thus, Applicants submit that independent claims 1, 10, and 21 as amended are described in the specification in such a way as to convey to one with ordinary skill in the art that the inventors had the claimed invention in mind at the time they filed the application. As such, these claims are now in condition for allowance. Likewise, claims 2-4, 6-9, 11-20, 22-31, 35-37, and 42-43, which depend therefrom and therefore, which contain all the limitations thereof, are also in condition for allowance.

Applicants also note that amended claim 44, which specifies that the splice acceptor site is from MOV-9.1, should also be in condition for allowance since, as discussed above, the splice acceptor site from MOV-9.1 is the splice acceptor site necessary for the generation of the *env* mRNA in the wild-type Mo-MuLV retrovirus.

Amendment under 37 C.F.R. §1.116
U.S.S.N. 08/252,710

Lastly, with regard to page 6 of the Amendment under 37 C.F.R. §1.111 filed on June 10, 1999, Applicants wish to apologize for any confusion which may have been created by Applicants' inadvertent error in discussing the Shinnick et al. reference (Shinnick et al., "Nucleotide sequence of the Moloney murine leukemia virus," Nature 293 543-548, 1981 (provided as Appendix B in Applicant's Amendment filed June 10, 1999)). Although the splice acceptor site of the presently claimed vectors is immediately prior to the *env* gene of the wild-type retrovirus, at page 6 of the Amendment filed June 10, 1999, Applicants mistakenly quoted the splice acceptor site which is taught by Schinnick as being in the gag region as the splice acceptor site in the presently claimed vectors: "*a possible 3' splice acceptor at 560-568 (6/7 match with consensus acceptor sequence)*" (in Shinnick et al. at page 544, second column).

Applicants respectfully note for the record that the splice acceptor site of the presently claimed vectors is the splice acceptor taught by the Shinnick reference as being within the *env* gene immediately upstream of the putative initiator ATG triplet ("*a 3' splice acceptor sequence at 5,493-5,501*" at page 547, first column). Like the Lazo et al. reference, Schinnick also teaches that the splice acceptor of the *env* gene is located at approximately position 5490-5500 of the Mo-MuLV genome. The splice acceptor site in Applicants' claimed vectors is located within positions 5402-5766 of MOV 9.1. Thus, Applicants aver that the ordinarily skilled artisan would have known at the time that the Application was filed that the splice acceptor of the claimed vectors is the same as the splice acceptor site taught by Shinnick et al. as being located immediately upstream of the putative initiator ATG triplet in the *env* gene of the wild-type Mo-MuLV retrovirus.

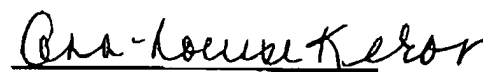
Amendment under 37 C.F.R. §1.116
U.S.S.N. 08/252,710

CONCLUSIONS

Applicants posit that the presently maintained rejections of the pending claims have been fully overcome by amendment and/or argument. Accordingly, Applicants respectfully submit that the pending claims are in condition for allowance. If the Examiner believes that any further discussion of this communication would be helpful, he is encouraged to contact the undersigned by telephone.

Applicants request a one (1) month extension of time, up to and including April 19, 2000, to submit this Amendment following Applicants' Notice of Appeal filed January 19, 1999. Pursuant to 37 C.F.R. § 1.136(a)(3), the Examiner is authorized to charge any fee under 37 C.F.R. § 1.17 applicable in the instant communications, or to credit any overpayments to Deposit Account No. 08-219. Such authorization should be treated as a constructive petition for extension of time in the concurrent as well as future replies.

Respectfully submitted,
HALE AND DORR LLP


Ann-Louise Kerner, Ph.D.
Registration No. 33,523
Attorney for Applicants

60 State Street
Boston, MA 02109
(617) 526-6000
(617) 526-5000 (fax)

Date: March 27, 2000

H:\Chiu_Nancy\Legal\docs\cell\106482.206\re7-19-99OA.wpd